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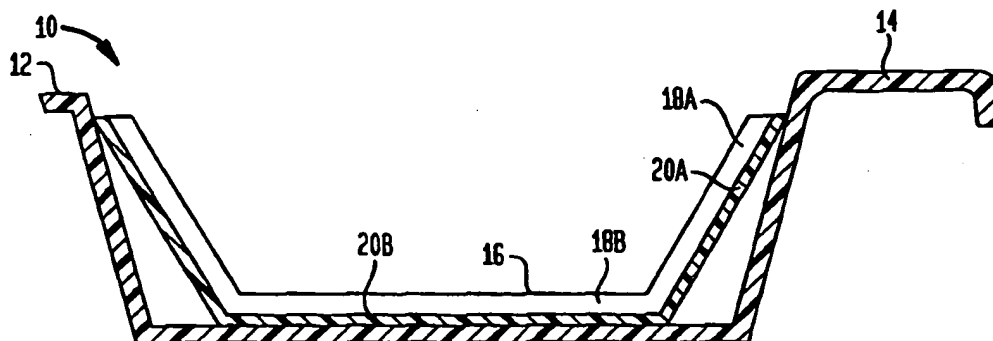




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: FLUSHABLE POTTY LINER



## (57) Abstract

A disposable, flushable, potty liner (10) is formed from a cup shaped article comprised of a two layer, flexible, biodegradable material, namely an outer substantially waterproof layer (20a, 20b) and an inner water absorbing layer (18a, 18b). The cup is a self-supporting structure, having a generally flat bottom and fluted side walls. The inner and outer layers are biodegradable, as well as being made of sufficiently flexible material and of sufficiently small dimensions, so that the potty liner (10) may be disposed of by flushing it down the toilet after the potty liner (10) has been soiled in use. In one embodiment, a potty liner (10) includes tabs (26, 28) extending from the perimeter of the cup, which provide a convenient means for lifting the potty liner (10) out of the receptacle (12) for disposal. In another embodiment, the flat bottom of the potty liner (10) contains a graphic image (16) on the top surface of the inner layer (18b) which is responsive to water or urine, to activate a change, such as for example to change color.

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## FLUSHABLE POTTY LINER

## Field of the invention

The present invention is related to the field of disposable products, and particularly in the field of disposable potty liners.

## Background of the invention

A child's potty is like a smaller version of a typical toilet, except that a potty contains a bedpan like container or receptacle instead of the water bowl and plumbing connections of a toilet. Accordingly, the potty receptacle which receives human wastes must be emptied into the toilet, and washed after use.

Potty liners are known. The purpose of a potty liner is to provide a means for preventing urine and fecal matter from soiling the potty receptacle, and also for providing a convenient way to remove and dispose of the human wastes. For example, see design patents Des. 354,342 and Des. 381, 070, which show various prior art potty liners.

U.S. patent 4,509,215, to Paz shows a disposable liner for a musical potty chair. In Paz, a liquid absorbing material is adjacent to the bottom of a plastic liner. The absorbing layer is held in place by a thin layer of plastic material overlapping the absorbing layer and having its peripheral edge attached to the inside surface of the side wall by bonding or other attachment means. In order for the liquid to reach the absorbing layer, Paz provides a series of spaced apart elongated or circular perforations in the plastic material over the absorbing layer, so that liquids may pass through and be absorbed by the liquid absorbing material.

## Summary of the invention

The present invention is embodied in a disposable, flushable, potty liner. The invented potty liner is a generally cup shaped article comprised of a two layer, flexible, biodegradable material, namely an outer substantially waterproof layer and an inner water absorbing layer. The cup itself is a self supporting structure, having a generally flat bottom and fluted side walls.

The flat bottom and fluted sides of the inner water absorbing layer both absorb urine, making the potty liner of the present invention easy to handle

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for disposal. The substantially waterproof (or water impervious) layer prevents escape of the contents of the potty liner. Since the inner and outer layers are biodegradable, as well as being made of sufficiently flexible material and of sufficiently small dimensions, the potty liner of the present invention may be disposed of by flushing it down the toilet after the potty liner has been soiled in use.

In another embodiment of the present invention, a potty liner in accordance with the present invention includes tabs extending from the perimeter of the cup. The tabs provide a convenient means for lifting the potty liner out of the receptacle for disposal.

In yet another embodiment of the present invention, the flat bottom of the potty liner contains a graphic image on the top surface of the inner layer. In yet another embodiment of the present invention, the flat bottom of the potty liner contains a graphic image which is responsive to water or urine, to activate a change, such as for example to change color.

#### Brief description of the figures

Figure 1 is a cross sectional side view of a potty liner in accordance with the present invention.

Figure 2 is a top view of one embodiment of the invention.

Figure 3 is a cross sectional view of bonded materials in sheet form used in the manufacture of the present invention.

Figure 4 is a top view of one embodiment of a die cut pattern used in the manufacture of the present invention.

Figure 5 is an isometric view of an alternate embodiment of a potty liner in accordance with the present invention.

#### Detailed description of a preferred embodiment

A potty liner 10 is placed in a potty receptacle 12, as shown in figure 1. The receptacle 12 includes a handle 14 for positioning the receptacle 12 in the child's potty (not shown) and removing the receptacle 12 for cleaning. The potty liner 10 is composed of a cup shaped water impervious side layer 20A and bottom layer 20B, and a corresponding cup shaped water absorbing side layer 18A and water absorbing bottom layer 18B. Furthermore, a graphics image 16, is positioned at the bottom inside surface of the potty liner 10, on top of the absorbing bottom layer 18B.

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A top view of the potty liner 10 is shown in figure 2. The respective bottom and side wall of the potty liner 10 is formed by the water impervious layer 20B, 20A and water absorbing layer 18B, 18A. In addition, the side wall of the potty liner 10 is fluted. In particular, an s-shaped fluting pattern is shown. The fluting may also be a saw toothed design. A fluted side wall makes the potty liner 10 self supporting, and provides a means for expansion so that the outer diameter of the potty liner 10 fits the inner diameter of potty receptacle 12 (figure 1).

In order to fit most potty receptacles, the bottom of the potty liner should be between 4 inches and 6 inches in diameter, or nominally about 5 inches. The substantially vertical side wall should be between 3 inches and 6.5 inches in height, or nominally about 4.75 inches.

A potty liner in accordance with the present invention is preferably manufactured by starting with layered material in sheet form 22 as shown in figure 3. The layered sheet 22 is comprised of a flexible, biodegradable material, namely a first substantially waterproof layer 20, and a second water absorbing layer 18, which latter layer should also be flexible and biodegradable. A graphic image 16 is formed on the top of the two layer sheet 22 by printing on the surface of the absorbing layer 18. Alternatively, a graphic image 16 may be attached to the absorbing layer 18 a separate insert, such as a self adhesive label.

The waterproof first layer 20 may be a wax impregnated paper. The absorbing second layer 18 may be any one of a number of materials including an absorbent paper, such as the paper used in disposable absorbent kitchen towels. The first and second layers 20, 18 are bonded together, as by fusion, or gluing. The potty liner of the present invention may also be formed by resting an absorbing layer 18 against a waterproof layer 20. In such case, the potty liner of the present invention is formed by assembling a wax paper cup and a conforming absorbent paper liner nested within the wax paper cup, which assembly fits within the potty receptacle.

After the layered sheet 22 is formed into a cup shape, the water absorbing layer 18 will be divided into a water absorbing bottom layer 18B and a water absorbing side layer 18A. The thickness and extent of the water absorbing layer 18 depends upon the material used for the layer 18. It is desired that the absorbing layer 18 (which ultimately forms a bottom layer 18B and a side wall area 18A) hold all or most of the urine expected from a single elimination within the time period that the potty is normally used by the child. By absorbing all or most of the urine, disposal of the soiled potty liner is convenient and free from spills. The average volume of urine expected is 10ml, while the maximum expected volume is 30ml. The thickness and extent

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of the absorbing layer 18 should be selected to absorb no less than half the average. Therefore, the thickness and extent of the absorbing layer 18, should be selected so as to absorb (over the time the potty liner is used), a volume of urine between 5ml and 35ml, and nominally, 20ml.

The absorbing bottom layer 18B will absorb urine directly. The absorbing side layer 18A absorbs urine after the capacity of the absorbing bottom layer 18B is exceeded. In addition, the absorbing side layer 18A, provides a capillary action absorbing urine away from the bottom layer 18B, before or after the bottom layer 18B becomes saturated. In such manner, the presence of absorbing material 18A on the sides of the potty liner 10 aids in the complete absorption of urine, making the potty liner easier to handle during disposal.

For greater absorbency, other materials, such as materials typically used in disposable diapers may be used as the absorbing layer 18A, 18B in the potty liner of the present invention. The use of materials with greater absorbency, or with thicker layers, means that the absorbing side layer 18B may only partially extend up the side walls of the potty liner 10. However, the total volume of the absorbing layer 18A, 18B should still be selected so as to absorb the nominal expected volume of urine.

A form 24 is die cut from sheet 22 as indicated in the top view of figure 4. After the form is cut from sheet 22, it is shaped by a suitable conventional paper forming processes into the cup shape of the potty liner 10 having a bottom and side wall. In figure 4, an alternate embodiment containing tabs 26 and 28 is cut from the layered sheet 22. Tabs 26 and 28 will extend upwards from the perimeter of the potty liner after the die cut shape 24 is formed into a cup shape. The purpose of the tabs 26, 28 is to provide a convenient means for lifting the potty liner out of the receptacle for disposal. The position of the tabs 26, 28 is shown in the isometric view of figure 5. In figure 5, the two layer 18A, 20A side wall is fluted using creased flutes in lieu of the s-shaped flutes of figure 2.

As indicated in figure 2, a graphic image 16 is disposed at the bottom of the potty liner 10. The graphic image 16 contains a water activated ink which changes color upon contact with urine. The graphic image forms a toilet training aid to encourage children to use the potty. Water activated inks which change color upon contact with urine are known in the art. Other forms of water or urine activation materials include inks which become visible or invisible upon contact with urine so as to induce a change in the appearance of the graphics image 16 in figures 2 and 3.

Accordingly, the foregoing disclosure of a potty liner provides a disposable



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product which absorbs urine, and which is biodegradable, and being sufficiently small and flexible, may be disposed of by flushing down the toilet.

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What is claimed is:

1. A potty liner comprising a cup shaped container having a bottom and a side wall, said cup shaped container further comprising:

an outer first layer forming said bottom and said side wall; and

an inner second layer disposed on said outer first layer, substantially extending across said bottom and at least a portion of said side wall,

wherein said outer first layer is a substantially water impervious layer and said inner second layer is a water absorbing layer.

2. A potty liner in accordance with claim 1, wherein said cup shaped container has a substantially flat bottom.

3. A potty liner in accordance with claim 1, wherein said cup shaped container has a substantially vertical fluted sides.

4. A potty liner in accordance with claim 1, wherein said outer first layer comprises wax impregnated paper.

5. A potty liner in accordance with claim 1, wherein said inner second layer comprises an absorbent paper.

6. A potty liner in accordance with claim 2, wherein said substantially flat bottom includes a substantially flat inner second layer, and further contains a graphic image on said substantially flat inner second layer.

7. A potty liner in accordance with claim 2, wherein said substantially flat bottom includes a substantially flat inner second layer, and further contains a water activated graphic image on said substantially flat inner second layer, whereby said water activated graphic image changes upon contact with urine.

8. A potty liner in accordance with claim 1, wherein said outer first layer and said inner second layer are biodegradable.

9. A potty liner in accordance with claim 1, wherein said outer first layer and said inner second layer are sufficiently flexible so as to be flushable in a toilet.

10. A potty liner in accordance with claim 1, wherein said outer first layer

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and said inner second layer are sufficiently small so as to be flushable in a toilet.

11. A potty liner comprising a cup shaped container having a substantially flat bottom and a side wall, said cup shaped container further comprising:

an outer first layer, said outer first layer being a substantially water impervious layer;

an inner second layer disposed adjacent to said outer first layer, said inner second layer being a substantially water absorbing layer; and

a graphics image on said inner second layer at said bottom of said cup, said graphics image including a material responsive to urine, whereby said graphic image changes upon contact with urine.

12. A potty liner in accordance with claim 11, wherein said cup shaped container has a substantially vertical fluted sides.

13. A potty liner in accordance with claim 11, wherein said outer first layer comprises wax impregnated paper.

14. A potty liner in accordance with claim 11, wherein said inner second layer comprises an absorbent paper.

15. A potty liner in accordance with claim 11, wherein said outer first layer and said inner second layer are biodegradable.

16. A potty liner in accordance with claim 11, wherein said outer first layer and said inner second layer are sufficiently flexible so as to be flushable in a toilet.

17. A potty liner in accordance with claim 11, wherein said outer first layer and said inner second layer are sufficiently small so as to be flushable in a toilet.

18. A potty liner comprising a cup shaped container having a bottom, and a side wall connected at one end thereof to said bottom, said side wall having a top perimeter edge distal from said bottom, said cup shaped container further comprising:

an outer first layer, said outer first layer being a substantially water impervious layer;

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an inner second layer disposed adjacent to said outer first layer, said inner second layer being a substantially water absorbing layer; and

first and second tabs coupled to said side wall, said first and second tabs adapted for lifting said potty liner.

19. A potty liner in accordance with claim 18, wherein said first and second tabs extend substantially vertically from said side wall.

20. A potty liner in accordance with claim 18, wherein said outer first layer comprises wax impregnated paper.

21. A potty liner in accordance with claim 18, wherein said inner second layer comprises an absorbent paper.

22. A potty liner in accordance with claim 18, wherein said outer first layer and said inner second layer are biodegradable.

23. A potty liner in accordance with claim 18, wherein said outer first layer and said inner second layer are sufficiently flexible so as to be flushable in a toilet.

24. A potty liner in accordance with claim 18, wherein said outer first layer and said inner second layer are sufficiently small so as to be flushable in a toilet.

25. A potty liner in accordance with claim 18, wherein said cup shaped container includes a substantially flat bottom and a substantially flat inner second layer, and further contains a graphic image on said substantially flat inner second layer.

26. A potty liner in accordance with claim 18, wherein said substantially flat bottom contains a water activated graphic image on said substantially flat inner second layer.

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FIG. 1

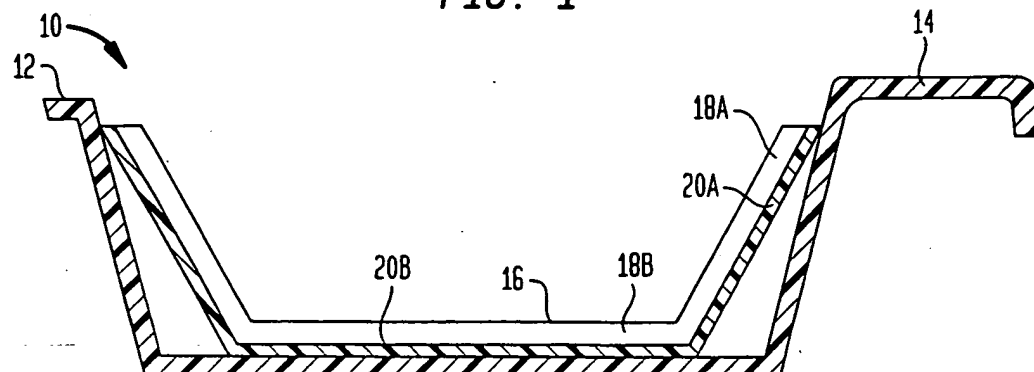
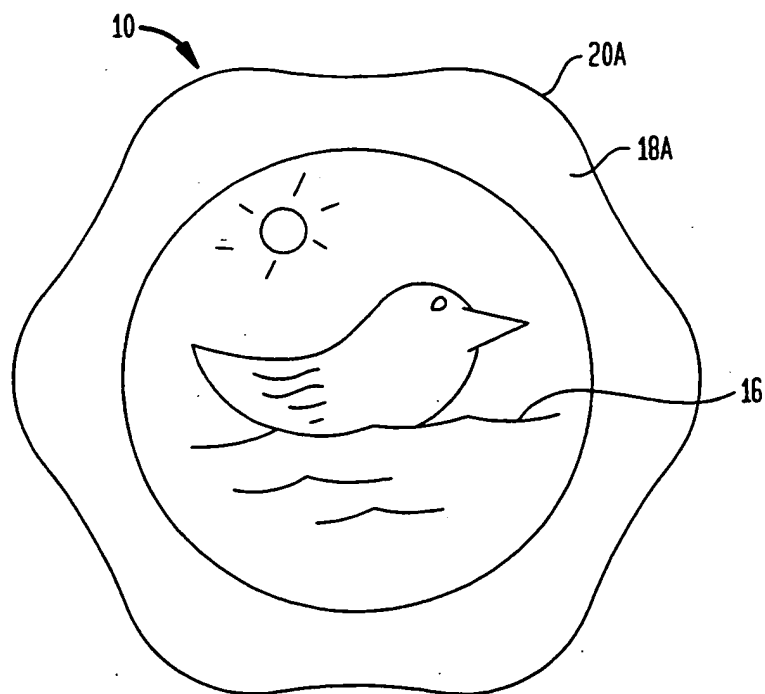


FIG. 2



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FIG. 3

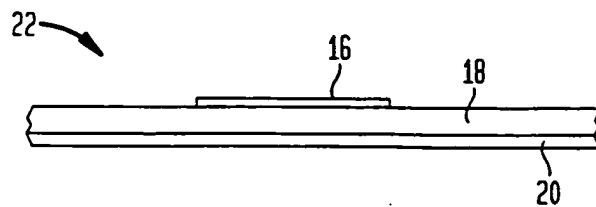


FIG. 4

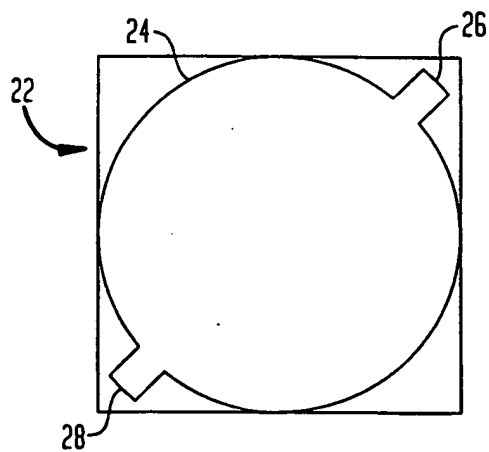
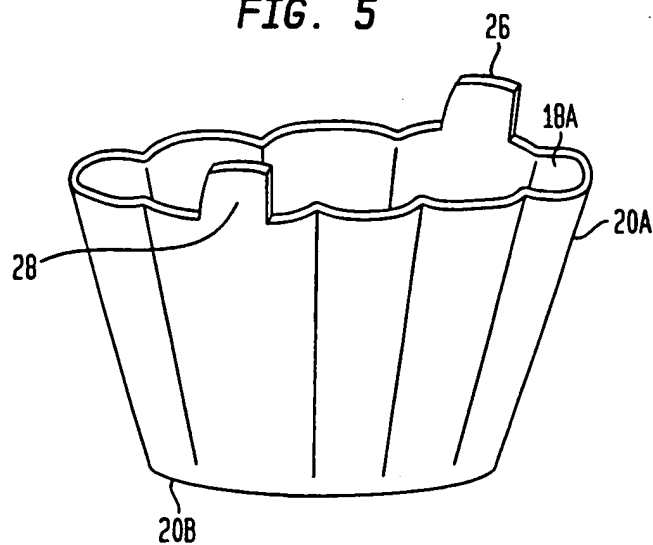


FIG. 5



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## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 99/06709

A. CLASSIFICATION OF SUBJECT MATTER  
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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A47K A61G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 229 699 A (HARRISON IAN ALEXANDER) 3 October 1990 see page 2, paragraph 1 - paragraph 5 see page 5, paragraph 2 - paragraph 3 see page 6, paragraph 8 - page 8, paragraph 1; claims 1-3; figures 1-3	1-3, 6, 7, 11, 12
Y	---	4, 13-19, 25, 26
X	EP 0 296 143 A (BRINA CONTACT SPRL) 21 December 1988 see column 2, line 20 - line 55; claims 1-8; figures 1, 2	1-3, 5, 8-10
Y	---	14-18, 21-24
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Patent family members are listed in annex.

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A	---	20
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